

REMARKS

Applicant thanks the Examiner for acknowledging the claim for priority under 35 U.S.C. § 119, and receipt of a certified copy of the priority document submitted September 11, 2003.

Applicant thanks the Examiner for considering the references cited with the Information Disclosure Statement filed September 11, 2003.

Status of the Application

Claims 1-16 are all the claims pending in the Application, as claims 7-16 are hereby added. Claims 1-6 have been rejected.

Drawings

The Examiner has objected to the Drawings for an informality. The informality noted by the Examiner has been corrected. Thus, withdrawal of this objection is respectfully requested.

Claim Objections

The Examiner has objected to claims 1-5 due to informalities. The informalities noted by the Examiner have been corrected. Thus, withdrawal of the objection is respectfully requested.

Obviousness Rejection

The Examiner has rejected claims 1-6 under 35 U.S.C. § 103(a) as being unpatentable over *Carden et al* (US 6,224,711 B1; hereinafter “*Carden*”) in view of *Shiozawa* (US 6,391,686 B1; hereinafter “*Shiozawa*”). This rejection is respectfully traversed.

There Would Have Been No Motivation To Modify Carden In View Of Shiozawa

Applicant respectfully submits that one of ordinary skill in the art at the time of the invention would not have been motivated to modify the flip-chip construction method of *Carden* with the anisotropic conductive film construction method of *Shiozawa*, at least as alleged by the Examiner.

Specifically, *Carden* discloses a flip-chip construction method where chip 4 is mounted to chip carrier 2 by way of soldered joints 6, and is peripherally surrounded by stiffener 8, which is mounted to chip carrier 2 by way of adhesive 10. A cover plate 16 is attached to the tops of stiffener 8 and chip 4 by way of adhesive 14 (*see FIG. 4*).

In contrast, *Shiozawa* discloses (*see, e.g.*, FIGS. 3-5) a manufacturing method where a base tape 16, an adhesive material 14, and an interconnect substrate 40 are pressed together by jig 30 to form an anisotropic conductive film. This film is then used to connect a semiconductor chip to a package substrate.

Thus, the end product of *Shiozawa* would actually be used as a replacement for soldered joints 6 in *Carden*, rather than an alternative method for applying the adhesive 10 or 14 of *Carden*, as the Examiner seems to allege.

Further, Applicant respectfully submits that: (1) that the Examiner has not indicated any reasons why one of ordinary skill in the art would have modified adhesive 10 or 14 of *Carden*;¹ and (2) that the Examiner's position that both references "are related to the same subject matter" is not accurate, as *Shiozawa* is not directed specifically towards a flip-chip package similar to *Carden*.

¹ The Examiner must "show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for a combination in the manner claimed." *In re Rouffet*, 47 USPQ2d 1453 (Fed.Cir. 1998).

Carden And/Or Shiozawa Fail To Teach Or Suggest All The Features Of Independent Claim 1

Additionally, Applicant respectfully submits that, even if it would have been possible to modify *Carden* in view of *Shiozawa* as the Examiner alleges, the resultant combination would still fail to teach or suggest that “gaps are provided between said stiffener and said substrate that each extend outwardly from positions that confront two sides of said semiconductor chip and that communicate with ends of said substrate,” as recited in independent claim 1.

More specifically, even if adhesive 10 or 14 of *Carden* could have been modified to use the adhesive application method for adhesive material 14 of *Shiozawa*, the end product would still not have any “gaps” as recited in independent claim 1.

Rather, the gaps in adhesive material 14 of *Shiozawa* cited by the Examiner are only present in the interim production step shown in FIG. 3, and are closed during the pressing of adhesive material 14 by pressing jig 30. The closing of gaps 15 allows the lateral movement of adhesive material 14 away from first regions 48 to prevent the accumulation of bubbles near first regions 48. No gaps 15 remain in the final product of *Shiozawa*, as shown in FIG. 5 therein.

Thus, Applicant respectfully submits that independent claim 1 is patentable over the applied references. Further, Applicant respectfully submits that rejected dependent claims 2-6 are allowable, *at least* by virtue of their dependency.

Dependent Claims 2-6 Are Separately Patentable

Applicant respectfully submits that each of the claims 2-6 is also separately patentable over the applied references.

Regarding claims 2 and 3, Applicant respectfully submits that, even if *Carden* could have been modified in view of *Shiozawa* as the Examiner alleges, the resultant combination would still fail to teach or suggest any widths of any gaps relative to chip 4 of *Carden*. *Shiozawa* is silent regarding any particular widths of gaps 15 relative to any chips.

Regarding claims 4 and 5, Applicant respectfully submits that, even if *Carden* could have been modified in view of *Shiozawa* as the Examiner alleges, the resultant combination would still fail to teach or suggest “depressions” in either a “substrate” or a “stiffener.” *Carden* discloses no such depressions, as stiffener 8 and substrate 2 are flat throughout their width, and *Siozawa* fails to teach or suggest any particular stiffener or substrate, let alone their specific construction.

Regarding claim 6, Applicant respectfully submits that, even if *Carden* could have been modified in view of *Shiozawa* as the Examiner alleges, the resultant combination would still fail to teach or suggest that any adhesive “is not provided in portions in which said depressions are formed.” *Carden* fails to disclose any depressions, and applies adhesive 10 and 14 throughout its construction. *Shiozawa* also provides adhesive throughout its length in its final construction shown in FIG.

Thus, Applicant respectfully requests that the Examiner withdraw this rejection.

New Claims

Claims 7-16 are hereby added. Claims 7-16 are fully supported *at least* by the Figures of the instant Application.

Conclusion

In view of the foregoing, it is respectfully submitted that claims 1-16 are allowable.

Thus, it is respectfully submitted that the application now is in condition for allowance with all of the claims 1-16.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Please charge any fees which may be required to maintain the pendency of this application, except for the Issue Fee, to our Deposit Account No. 19-4880.

Respectfully submitted,



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Date: July 2, 2004